Big Hole Pumping Station
Old Highway #43
Divide Vicinity
Silver Bow County
Montana

HAER No. MT-34

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

Big Hole Pumping Station

MT-34

Location: On the Big Hole River, 2 1/2 miles northwest of Divide, on Old Highway #43, Silver Bow County, Montana.

Date of Erection: 1899; major addition 1906.

Present Owner: Butte Water Company (original owner)
124 West Granite Street
Butte, Montana

Present Use: To supply water for the Butte Mining District and the residential areas of Butte, Walkerville, East and South Butte.

Significance: The Big Hole Pumping Station was a creative and far-sighted solution to the water supply problems faced by the mining industry and the residential community in the Butte area. The water system pumps over 15 million gallons a day over the Continental Divide to Butte and the surrounding areas, with a maximum distance covered of almost 28 miles.

Butte is the largest American city which began as a mining camp (in 1864) and the largest in close proximity to the Continental Divide. Due to high bedrock in the Silver Bow Basin the artesian effect is limited, and as mines dug deeper into the earth, the aquifer drained off into the mineshafts. Water quality was polluted at an early date from mine tailings, smelting slag, and residential sewerage. The water retrieved from the mines was a dilute sulfuric acid, unfit for any commercial or domestic use. The city's population tripled in the 1880's, with a corresponding increase in water demands from the mines, mills and smelters. Butte saw another tripling of population in the 1890's, and the water situation had become critical.

The Butte Water Company was established in 1898, and the pumping station was installed on the Big Hole River a year later. An 840 foot pump lift fed water sources to reservoirs on Divide Creek and over the Continental Divide to Basin Creek. The water was then allowed to drain by gravity through continuous stave redwood pipelines to the fifteen square mile area served by the Company, including Butte and its surrounding suburbs.

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Seven zones were established to maintain appropriate pressures in the distributing system. Pumping was minimized by establishing piping interconnections between the three independent water sources, the Yankee Doodle Creek, the Basin Creek and the Big Hole River.

The brick pumping station, on a concrete foundation, was completed in 1899, with an equally large addition finished in 1906. The station contains two 20,000 lb. traveling cranes (one in each pumproom) and a large repair shop. The original #1 pump was a horizontal triple expansion two stage plunger pump manufactured by the Nordberg Manufacturing Company of Madison, Wisconsin. Installed in the original section of the pumping station in 1899, this pump was powered by steam produced by burning of coal. This pump was electrified in 1907 and remained in operation until 1946.

In 1906, the pumping station was expanded to accomodate the #2 pump, another horizontal triple expansion two stage plunger pump. Also manufactured by the Nordberg Company, #2 pump was installed and electrified by 1907. The pump was capable of pumping four million gallons per day. The electric motor is an 800 h.p. induction motor. The #3 pump is a Worthington five stage horizontal turbine, driven by a 1300 h.p. induction motor. This pump was installed in 1916 and is capable of pumping just over six million gallons per day. The #4 pump is a Cameron four stage 12" horizontal turbine, driven by a 1300 h.p. synchronous motor. Installed in 1930, #4 pump is capable of pumping seven million gallons per day. The #5 and #6 pumps are Ingersoll Rand four stage horizontal turbines driven by 700 h.p. squirrel cage motors. Both of these pumps were installed in 1954 and are each capable of pumping 3.5 million gallons per day. These pumps use the suction line from pump #1 (which was removed from the station in 1953).

A 150 foot riveted steel smokestack was erected in 1899 for the original steam boilers. A coal ramp was built onto the back of the building for the hauling and dumping of coal into the coal bins. The sterling boilers and the smokestack still exist but are no longer in use. The coal ramp has been removed.

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The Big Hole Pumping Station has consistently kept pace with the necessary technical improvements in the field, installing new pumps to increase its capacity, and it continues to meet the water demands of Butte and the surrounding area.

Reference: Bick, Patricia and Miles Tuttle; National Register Nomination Form, May 12, 1980.

Transmitted By: Kevin Murphy, Historian HAER, June 1984.